

## REMARKS

It is respectfully submitted that the independent claims 21 and 30, as amended so as to even more clearly recite the invention, are distinguished over the article by Lee, et al.

Lee relates to a particular configuration for use in an apparatus comprising two stages of an erbium doped fiber amplifier (EDFA); see Fig. 1, and page 1316, col. 2 of Lee.

Lee's apparatus comprises a dispersion compensating fiber (DCF) located between two erbium doped fibers (EDFs). Each EDF is pumped with a 980nm pump, so as to act as an amplifier or gain media. The DCF is inserted between the EDFs to compensate for the accumulation of chromatic dispersion.

In Lee, a CW probe beam is set at a power level of 0.5dBm, and input via a 10dB coupler into the second stage EDF (at, effectively, a power level of -9.5dBm into the EDF).

It should be noted that the stimulated Brillouin scattering (SBS) threshold of the DCF using the experiment is 6.5dBm (i.e., col. 1, page 1317). Thus, Lee discloses that the probe is arranged to generate the probe beam at a power *less* than the SBS threshold of the DCF, and that the probe signal enters the amplifier at a power *less* than the SBS threshold.

In Lee, when the number of incoming channels decreases due to add/drop, the gain experienced by the probe beam as it passes through the second stage EDF increases. This amplified probe beam is then of sufficient power to stimulate Brillouin scattering from the DCF, thus increasing the Stokes field that re-enters the second stage amplifier. See page 1317, col. 1, par. 1.

Thus, Lee requires that the probe beam signal is amplified to produce stimulated Brillouin scattering. Further, in Lee, stimulated Brillouin scattering occurs within the DCF, and only then when the probe beam has been amplified. Lee does *not* describe any stimulated Brillouin

scattering occurring *within* either of the amplifiers, i.e. either of the erbium doped fibers. Lee simply indicates that once Brillouin scattering has occurred within the DCF, there is a consequent increase in the Stoke's field that re-enters the second stage amplifier.

By way of contrast, the gain control signal of the present invention is generated by a source at a power *greater* than the SBS threshold of the relevant scattering medium (e.g., see PCT description, page 11, par. 2 on). Further, in the present invention, the apparatus is arranged such that SBS occurs within the optical amplifier and, in particular, *in the amplification medium*.

By way of contrast, in Lee, SBS only occurs within the dispersion compensating module, and requires that the probe beam is first amplified by the gain medium in order for this SBS to occur.

Lee thus teaches *away* from the present invention, because Lee teaches that the power of the probe beam should be *less* than the SBS, in order that the probe beam then only experiences gain sufficient to cause SBS when the number of incoming channels decreases. In Lee, this decrease in the channels results in the probe beam being amplified so as to stimulate Brillouin scattering from the DCF. In Lee, launch of the probe beam at a lower power than the SBS threshold is required such that the decrease in input signal power leads to the probe beam being amplified to achieve SBS, i.e., effectively acting as a feedback mechanism to achieve gain clamping. Further, this feedback mechanism requires the probe beam to be amplified by the EDFA, with SBS occurring *outside* the EDFA to increase the input power to the EDFA.

Thus, Lee teaches *away* from the concept of the gain control signal being generated at a power *greater* than the stimulated Brillouin scattering threshold, and also away from the concept of the stimulated Brillouin scattering occurring *within the amplification medium*.

Thus, the present invention, as defined by the amended claims, is not only novel but also inventive over the cited prior art.

Petition is hereby made for a two-month extension of the period to respond to the outstanding Official Action to February 24, 2010. If there are any additional charges, or any overpayment, in connection with the filing of this response, the Commissioner is hereby authorized to charge any such deficiency, or credit any such overpayment, to Deposit Account No. 11-1145.

Wherefore, a favorable action is earnestly solicited.

Respectfully submitted,

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